

## **REMARKS**

Applicants respectfully request reconsideration of the claims of this application in light of the present amendment.

Claims 16-29 and newly added claim 30-42 are pending. Claims 1-15 have been canceled as they were directed to non-elected claims. In view of the examiner's earlier restriction requirement, Applicants retain the right to present claims 1-15 in a divisional application.

Applicants respectfully submit that original claim 16 excluded the use of curd as the cheese phase since the cheese phase was required to be "in the form of cheese chucks or cheese shreds." As those skilled in the art realize, curd is not consistent with "cheese chucks or cheese shreds." Nonetheless, claim 16 has been amended to make it clearer that the claims exclude the use of curd as the cheese phase. Support is provided at page 4, lines 17-18 and page 5, line 25.

New claims 30-42 have been added to further define the method of the invention. Support for these new claims can be found as follows:

Support for the cured natural cheese recitation indicated in claims 30 and 39 is at page 3, lines 7-8 and page 6, lines 15-16 & 24-25. Support for the cured types of cheeses indicated in claims 31 and 40 is at page 6, lines 21-23 and the Examples.

Support for the less than about 10 percent viscosity reduction during extrusion indicated in claims 32 and 37 is at page 10, lines 20-23. Support for the viscosity ranges indicated in claims 33-34, 36, and 38 is at page 10, lines 2-6. Support for the percentage ranges of cheese product components indicated in claims 35 and 41 is at page 7, lines 12-14, and the Examples.

Support for the temperature, water activity, pH ranges, and relative proximities of the latter two properties as between different phases, indicated in new independent claim 36 is at page 8, line 28 to page 9, line 8, and original claim 18; and the support for the less than about 20 percent viscosity reduction during extrusion indicated in the same claim is at page 10, lines 20-22. Support for new claim 42 is similar to that indicated above for new claim 36 from which it depends; and that indicated above for the clarifying language added to claim 16.

The indicated support in the present application for any of the above-indicated claim features is merely representative, and is not meant to be exhaustive. No new matter has been introduced.

### The Present Claims

The present claims relate to a method for providing a nutritionally superior cheese product prepared by co-extruding a cheese phase in the form of chucks or shreds and second edible phase under low or moderate shear conditions wherein the viscosities of the cheese and second phase are not reduced by more than about 20 percent or less, and without the use of adhesive or heat to bind the phases together as discrete phases.

As those skilled in the art know, the cheese phase, which is required by the original claim language, to be in the form of chucks or cheese shreds, cannot be a cheese curd. In order to make this clearer, Applicants have amended claim 16 to specifically require the cheese chucks or cheese shreds to be in the form of “process cheese, uncured natural cheese, or cured natural cheese.”

The claimed method provides the following, among other, advantages and benefits:

- 1) a conveniently-shaped nutritionally-fortified cheese product comprised of multiple discrete edible phases obtained from component phases having closely matched water activity and pH properties, in which the discrete phases remain separate and distinct throughout their shelf life (claims 16-40; page 7, lines 18-30);
- 2) co-extrusion of a cheese phase (i.e., non-curd) as a process component, which, for example, renders the process more versatile and convenient since the cheese phase can be stored until needed (claims 16-34, 38, 39; page 6, lines 15-16); and
- 3) the cheese phase and second edible phases are provided at suitable viscosity levels, for example, those generally consistent with a dough-like viscosity, to improve co-extrusion performance and improve extruded product quality (claims 32, 33, 35-40; page 7, lines 28-30, page 10, lines 1-22 and Examples).

Rejection of Claims 16-29 Under 35 U.S.C. §102(b) or Alternatively  
Under 35 U.S.C. §103 over U.S. Patent No. 5,194,283 to Dupas et al.

The Office Action argues that Dupas et al. teach coextrusion of a cheese product having a first discrete phase and second discrete phase at a temperature of from 0°C to 30°C (Office Action, page 2, emphasis added). The Office Action acknowledges that the present claims differ from Dupas et al. in that the reference fails to teach or suggest the water activity and pH limitations recited in the present claims. Office Action urges, however, that:

“[i]n the absence of a showing to the contrary, the claimed pH and water activity would be no more than inherent and/or obvious to that of Dupas et al. as the same components and processing steps are used.” Office Action, p. 2.

Applicants respectfully disagree and believe that the Examiner has mischaracterized Dupas et al. This reference does not teach the use of a cheese as suggested by the Examiner. Rather Dupas et al. teach the use of a curd. As those skilled in the art know, a curd is very different from a cheese and has very different properties. Curd is the thick, clotted protein obtained when fresh milk is treated with a clotting or coagulating agent (usually rennet).

Applicants point out that present claims 16-42 require co-extruding a cheese phase in the form of chunks or shreds in combination with the second edible phase which is closely matched with the cheese phase in terms of water activity and pH, among other recitations. The cheese phase in the present invention cannot in the form of a curd. As noted above, Applicants have amended claim 16 to make this even clearer.

The present claims also recite significantly different components and process conditions than Dupas et al. For example, Dupas et al. do not teach or suggest, inherently or otherwise, using a cured cheese phase or closely matching water activity and pH as between the outer and core layers of an extrudate much less the possible significance of doing so.

Applicants also note that Dupas et al. describe a process for manufacture of composite cheeses in which one or more drained curd(s) of cheese and, optionally,

a non-cheese food composition are co-extruded in the form of a strand at a temperature of from 0 to 30°C (32 to 86°F). See col. 1, lines 50-54. More particularly, Dupas et al. describe two different processes for producing either a so-called fresh cheese product or a so-called semi-hard cheese product from curd by co-extrusion and cutting the extrudate into portions of various shapes. Abstract. In the case of production of the so-called fresh cheese product according to Dupas et al., plastic and relatively moist lactic curd is used to form a fairly firm outer layer around a comparatively softer core to promote welding of the two compositionally different curds, which suggests the water activities of the outer and core layers may not or should not be matched, and the resulting composite of curds is packaged without ripening any components thereof. Col. 2, lines 40-58; col. 3, lines 34-39; Example 1. Thus, in fact, Dupas et al. actually teaches away from the present invention since, as one skilled in the art would realize, the firm outer layer and the softer core would be expected to different water activities (i.e., nonmatched).

Clearly, the outer layer of Dupas et al.'s fresh cheese product is not provided and co-extruded as a cheese phase in the form of cheese chunks or cheese shreds. Also, there is no factual basis for assuming the curd used by Dupas et al. in their co-extrusion process has the water activity and pH values recited in the present claims. Dupas et al. describe manipulating the fat content and/or temperature as between the outer and core curd layers to achieve the different curd firmness/softness properties and desired welding. Col. 2, line 59 to col. 3, line 2. However, there is no factual basis for presuming that Dupas et al. inherently provides an outer layer and core layer that have closely matching water activity and pH. Dupas et al.'s attention was focused elsewhere. Indeed, they suggest otherwise based on the different properties of the outer and core curd layers.

In the case of production of the so-called semi-hard cheese product according to Dupas et al., rennet curd is produced and drained without pressing or molding, next is acidified, and then is ground in a mill until fine grains are obtained. Col. 3, line 40 to col. 4, line 9. It also should be noted that Dupas et al. exemplify providing ground rennet curd composed of grains approximately 1 mm in diameter. Col. 5, line 67 to col. 6, line 2. Clearly, the fine grains of curd are not the same, or even similar, in properties to the cheese chunks or shreds of the present claims.

As also indicated above, Dupas et al. describe making the semi-hard cheese product using fine ground rennet curd that is co-extruded with a core layer comprised of an emulsion of meat or an entirely different type of cheese curd than the outer layer. Col. 3, lines 54-56; col. 6, lines 24-27, 35-37. No water activity or pH values are described by Dupas et al. for either the outer or core layers of their semi-hard cheese. Instead, Dupas et al. exemplify semi-hard cheese products made from an outer curd of St. Paulin cheese and an inner curd of Edam cheese. Col. 6, lines 28-40. Clearly, Dupas et al. do not use the "same components" in their semi-hard cheese products. Any assumption that these different types of curds, not cheeses, might have closely matched water activity or pH values similar to those presently claimed, is purely speculative. Also, all examples described by Dupas et al. are in present tense, which suggests that the patent examples were actually carried out. The lack of any working examples is also supported by the fact that no properties, including organoleptic properties, water activities, pHs, or any other properties are reported for the food products claimed in Dupas et al. If products were actually made, one of ordinary skill in the art would expect that at least some properties would be reported.

Consequently, there is no reasonable or factual basis for assuming, as the Examiner has done, that the outer and core curd layers described by Dupas et al. might inherently have water activity and pH within the ranges as presently claimed (e.g., see present claims 16, 18, 35). Nor does Dupas et al. teach or suggest to one of ordinary skill in the art any advantage or benefit that might be associated with or obtained from closely matching the water activity and pH values of the inner and outer layers.

Present claims 36-42 recite even more specific water activity, water activity proximity, pH, and viscosity values for the cheese phase and second edible phase. Those claims are even further distinguished from Dupas et al. relative to those features.

In view of the above, Applicants respectfully submit that a prima facie case of obviousness has not been established against the present claims based on Dupas et al. Thus, claims 16-40 are patentable over Dupas et al., and, accordingly, Applicants request that this rejection be withdrawn.


Applicants respectfully submit that all pending claims are in condition for allowance and respectfully request that this case be passed to issuance.

The Commissioner is hereby authorized to charge any additional fees which may be required in the Application to Deposit Account No. 06-1135.

Respectfully submitted,

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